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Worldwide Report

TELECOMMUNICATIONS POLICY, RESEARCH AND DEVELOPMENT

(FOUO 9/81)

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CONTENTS

BRIEFS

NIGERIAN TELECOMMUNICATIONS PROJECT--Tokyo, 4 Jul (JIJI Press)--Marubeni Corp, a major trading house, has landed a 16 billion-yen (about 72.7 million dollars) order from the Nigerian Telecommunications Ministry to build a microwave communications network in southwestern Nigeria, it was learned here Saturday. Nippon Electric Co and Sumitomo Electric Industries Ltd will undertake the construction work for completion in 2 years. The project is part of Nigeria's 5-year plan beginning in 1980 to improve the telecommunications system, regarded as one of the most vital infrastructure facilities for the African nation's economic development being pushed with its massive oil revenues. The contract calls for the construction of 77 communication circuit bases, including communication buildings and towers, and a total of 1,820 kilometers of communication circuits. [Text] [OW071231 Tokyo JIJI in English 1405 GMT 4 Jul 81]

CSO: 5500/2252

BRIEFS

VHF NETWORKS--The new VHF telecommunications network in southeast Congo will link Brazzaville, Pool (Kinkaka), Bouenza (Madingou-Loutete-N'Kayi), Lekoumou (Sibiti), Niari (Loubomo, Makabana) and Kouilou (Pointe-Noire). This project by the French TRT company, which was started at the end of December 1980, is scheduled to be completed in June 1982. The system will be broad band with a capacity of 960 phone lines. Three channels are planned (one telephone, one television and one emergency). The VHF telecommunications network for northern Congo is under construction by the French Thompson company. The first leg of 45 km has already been installed. This network will bring television and 960 phone lines all the way to Mossaka and Boundji. The financing for these projects is almost complete. [Text] [Paris MARCHES TROPICAUX ET MEDITERRANEENS in French 1 May 81 p 1255]

CSO: 5500/5035

TANZANIA

BRIEFS

NEW TRANSMITTERS ON ZANZIBAR--A new shortwave transmitter will be installed on Zanzibar at the end of this year or the beginning of next year. It will be located at Langoni. The Ministry of Information, Radio and Television is now lining up financing for feasibility studies for a mediumwave transmitter. Installation of the two transmitters would enable Radio Zanzibar (Sauti ya Tanzania-Zanzibar, or RTZ) to be heard throughout Tanzania, and also in neighboring countries. [Text] [Paris MARCHES TROPICAUX ET MEDITERRANEENS in French 5 Jun 81 p 1546]

CSO: 5500/5035

USSR

OLYMPICS FACILITIES USED IN THE COMMUNICATION SYSTEM OF THE COUNTRY

Moscow ELEKTROSVYAZ' in Russian No 3, Mar 81 pp 40-42

[Article by V. I. Glinka: "Olympics Facilities Used in the Communication System of the Country"]

[Text] In his congratulatory message to all participants of the preparation and conducting of Olympics-80, Leonid Il'ich Brezhnev, general secretary of the CPSU Central Committee and chairman of the Presidium of the Supreme Soviet of the USSR, called the 22nd Summer Olympic Games a significant international event and a contribution to the strengthening of friendship, mutual understanding and peace among the nations. He rated highly the organization of the Games, including the operation of the systems of communication, radio, and television. The complex of telecommunication and computer facilities instantaneously produced and transmitted comprehensive information on the progress of competitions to the organizers of the games, judges, journalists, and fans on all five continents. Naturally, the good results were due to selfless strenuous work of a large number of communication specialists of the country. One hundred and forty three communication specialists who distinguished themselves during the preparations and conducting of the 22nd Olympic Games were awarded orders and medals of the USSR.

Olympics-80 became history. However, its lessons are instructive. All main communication facilities built for the holiday of sports became integrated in the communication system of the country and continue to operate having partially changed their functions.

The 22nd Olympic Games held in the Soviet Union were a serious test for communication workers. They encountered for the first time many problems which arose because of the working conditions of the organizers of the games, requirements of the organizations serving the Olympics, thousands of journalists and commentators, as well as guests, tourists, and spectators. It was necessary to solve problems of two categories:

1) to provide extended communication facilities and services for permanent consumers; enterprises, organizations, hotels, cultural centers, trade centers, public catering enterprises: communication facilities, services, etc;

2) to provide communication facilities for temporary consumers, for the short period of preparations and conducting of the Olympics: television companies, commentators, journalists, organizers of the games, officials, guests and tourists, as well as organizations serving only the Olympics. These consumers had very extensive, technically complicated requirements for new types of communication services.

To solve the problems of the first category, design organizations of the USSR Ministry of Communications developed a number of complex projects using new technical solutions, modern domestic and foreign equipment, and construction organizations of the ministry constructed, installed, and adjusted all facilities in a short period of time by the beginning of the Olympics.

In the capital of our country, the following new facilities were put into operation for the Olympics: long-distance telephone station ARM-20, international telephone station using quasi-electronic type equipment; modern electronic telegraph station "Teleks", Olympics television and radio-broadcasting switching center, 50,000 GTS [city telephone network] numbers, special five-digit telephone network assigned for the Olympics Organization Committee, radio telephone system for communicating with moving objects "Altay-ZM", search radio networks including personnel radio calls, first section of the International Post Office, and the Olympics Post Office.

New satellite communication stations were built in the Union network for operation in the "Interkosmos" and "Intelsat" systems; more than 16,000 kilometers of cable and radio relay communication lines were built and reconstructed.

In Tallinn, an intercity telephone station and a city telephone station were put into operation, and the telegraph station and "Altay" system network were expanded.

The technical solutions used for the structures of the Olympics objects and their potentialities are described in detail in the journal "Elektrosvyaz'", 1980, No 6, 7, [1-5].

The problems of the second category were more complicated. It was necessary to collect 60 television programs and more than 1200 commentaries from 26 sports facilities, including four in other cities, present them for processing to the Television and Radio Center, and then to transmit them to other countries via 20 international TV channels, tc ensure two-way information exchange in the automated control system "Olympics-80" via 411 communication channels, to organize temporary local, intercity, and international telephone, telegraph, facsimile and postal service in 32 press centers located at sports facilities, to ensure the transmission of an additional nine informational television programs in Moscow, to create special technological dispatching and assigned wire communication networks, as well as searching radio networks for controlling and serving the Olympics. All this required an extensive scientific and technical development of various designs of communication facilities.

Of course, it was possible to solve the above problems by building many kilometers of cable and radio relay communication lines and by installing independent equipment for each consumer, which was done, for example, at the Olympics in Munich, Montreal, and Lake Placid. But such a solution would have led to considerable consumption of material resources and a low degree of utilization of the communication facilities after the Olympics. Therefore, the design organizations of the USSR Ministry of

Communications approached these problems creatively and combined all consumers into a single complex transmission network, thus satisfying the strictest demands with minimal expenditures.

The unified communication network is certainly an entirely new technical solution. Scientific research institutes developed and manufactured equipment for organizing high-quality broadcasting channels based on the principles of delta-modulation, developed a unique complex for transmitting six television channels from one antenna system, and developed the principles of constructing channels for the exchange of information among the computers in the ASU [automatic control system]-Olympics network and principles of collecting, transmitting and switching a large number of television and commentator channels. Scientific and industrial organizations developed and supplied a considerable amount of modern communication equipment by the beginning of the Olympics, including digital transmission systems IKM-30 and the digital broadcasting equipment OTsV. An original network for collecting and transmitting documentary communication was developed on the principles of facsimile transmission.

Finally, for controlling technical facilities and their monitoring, the Soviet Union's first system was developed and introduced for operational monitoring and display of the dynamic state of television channels, group channels of multichannel transmission systems, including the IKM [pulse-code modulation] system. The obtained information was processed on computers and was displayed both in a real time scale, and accumulated in 24 hours. Moreover, the computer produced the program of work for the current day and the necessary commands for replacing or switching the channels.

In addition to operational monitoring, there was a system for gathering information on the results of the communication services for the 24-hour period in the sectorial cross section (statistical storage). Daily reports processed on the computer and printed out made it possible to perform elementary analysis and to reveal deviations in providing the services at each facility and in each sector.

The systems of operational monitoring and statistical storage operating during the time of the Olympics-80 made it possible for the workers of the communication control center to know the state of the technical facilities at any moment of time, to interfere efficiently and skillfully in the process of operation, and to control efficiently the enterprises and subdivisions of the electrical and postal communication services. The monitoring and control system played a decisive role in ensuring a reliable functioning of the technical facilities and efficient and faultless work of the attending personnel.

At the present time the operational monitoring system is being adapted for work in the main communication network, where it will be solving analogous problems.

The 1980 Olympics electric communication network made it possible to save more than 1000 kilometers of coaxial and balanced cables and a considerable amount of transmission equipment sets with frequency division of channels, to have small premises for communication centers at sports facilities, to give up expensive cable television and, which is most important, to use almost all communication facilities after the Olympics for the needs of the national economy and the population.

The training of the personnel for the operation of new technical facilities and temporary communication systems for providing communication services in Moscow and other cities where the Olympics took place was in the center of attention during the entire pre-Olympics period.

There were particular difficulties with facilities which operated only during the Olympics. Therefore, it was decided to send workers from communication enterprises of the country to Moscow for temporary assignments; these communication workers took a special training course. Senior students of the Moscow Electrotechnical Institute of Communications also participated. A team of 2500 students worked at the communication enterprises, and 800 people who knew foreign languages successfully provided communication services to foreign clients.

The high skills and enthusiasm of the operating personnel, in combination with excellently adjusted equipment, ensured faultless operation of the telecommunication and postal services. Services were of high standards, friendly, and efficient. It was not necessary to use standby channels because the technical facilities had no failures or idle time. There were no delays in the transmission of telegraph messages or in providing telephone calls and other communication services.

Television programs of the Olympics were viewed daily by more than 1.5 billion people. During the Olympics, 21 outgoing channels of satellite and ground communication system transmitted 1026 television programs of 2381 hours to 33 countries. From the sports facilities of Moscow, 59 television channels transmitted programs in the course of 6547 hours.

The Teleks network transmitted 9207 messages of 28,356 printed sheets to other countries, as well as about 10,000 telegrams.

More than 212,000 international telephone calls were handled, 194 Olympics facilities had synchronous translation equipment and more than 200 facilities had sound amplifiers. Postal services handled 3.2 million letters and postcards and 3.7 million items of printed matter, millions of stamps were sold, and the number of those wishing to have commemorative seals exceeded 2.5 million people.

The results of the work of the communication facilities during the summer Olympics of 1980 were rated highly also by the official representatives of the International Olympics Committee, many Soviet and foreign organizations, journalists, and guests of Moscow, Tallinn, Leningrad, Kiev, and Minsk.

Olympics-80 showed that Soviet communication workers coped well with all difficult problems of providing modern communication facilities for the games and achieved excellent work indicators and high standards.

The Olympics communication facilities have now switched to the everyday pace of serving the population and the national economy. It is necessary to utilize the accumulated experience in designing, construction, and operation of the Olympic communication networks and facilities and to consolidate in the Eleventh Five-Year-Plan the high level and indicators which were achieved during the Summer Olympic Games of 1980.

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10,233
CSO: 5500/15

USSR

MEETINGS OF FIFTH AND SIXTH RESEARCH COMMISSIONS OF MKKTT

Moscow ELEKTROSVYAZ' in Russian No 3, Mar 81 pp 50-51

[Article by K. K. Nikol'skiy]

[Text] Final meetings of the V and VI Research Commissions (IK) of the International Telegraph and Telephone Consultative Committee (MKKTT) were held from 28 January to 5 February 1980 in Geneva at the headquarters of the International Telecommunication Union. These meetings were preceded by the Plenary Assembly of the MKKTT held in November of 1980, when the work of all IK was summarized and the program of their work for 1981-1984 was determined.

The meeting of the V IK engaged in the study of problems of the protection of telecommunication installations against dangerous and interfering influences had 70 participants: specialists of 24 Communication Administrations, 12 private recognized firms and companies, as well as of two international organizations -- International High-Voltage Networks Conference and International Union of Railroads.

The meeting examined the state of studies on 19 problems entrusted to the V IK, formulated its decisions on them, developed new formulations and refined the formulation of some existing recommendations of series "K".

In the course of the meeting, 84 permanent, 18 temporary, and 8 delayed documents reflecting the experience accumulated by the participants of the V IK on the problems under study were discussed.

Fourteen of the nineteen problems studied during the period of 1976-1980 will be investigated later. Completed studies included: "Statistics of Damages of High-Reliability LEP [Electric Power Lines]", "The Use of Negative Boosting Transformers and Autotransformers", "Electric Shocks Affecting Telephone Sets", "High-Voltage Direct Current Lines", and "Analysis of the Existing Norms for Permissible Induced Voltage". Appropriate answers of these questions were formulated. They were included in the "Directives for the Protection of Communication Lines Against Dangerous and Interfering Influences" or will be published as series "K" recommendations.

The commission worked out the content of three new problems which, upon approval by the VII Plenary Assembly of the MKKTT, were turned over to the V IK for study in 1981-1984. These problems included the following: studies of protective devices and their measurement, influences of communication systems organized via electric

power transmission lines on communication lines, interference created in telecommunication circuits by geomagnetic storms.

Two new recommendations were adopted: on the protection of aerial communication cables against the influence of radio stations and on joint use of trenches and collectors for communication cables and power cables. The first recommendation proposed a method of calculating the influence of radio stations on aerial communication cables in metal sheathing or without it and appropriate protective measures, such as: to include capacitors of 0.01-0.05 microfarad between the cable conductors and the ground and between the conductors themselves; to use cables with an external aluminum shielding from 0.2 to 1.0 mm thick depending on the required lowering of interference. The shielding must completely cover the core and the ends of the conductors. Interference can be lowered also by reducing the length of the repeater section and by laying cables along a new route farther from radio stations.

In the second recommendation, conditions were formulated for joint use of trenches and collectors for communication cables and power cables, and general requirements were given for the above-mentioned cables from the standpoint of safety precautions.

Some changes were also made in the recommendation pertaining to tests for lightning protection of semiconductor intermediate amplifiers with remote power supply (Recommendation K-17). Among other things, it was proposed to include a new section pertaining to tests of equipment using microcoaxial cables of 0.7/2.9 mm.

It was decided to revise the "Directives ...". It is supposed that, upon approval of this proposal by the VII Plenary Assembly of the MKKTT, in the course of the next two research periods, i.e., in the course of eight years, the "Directives ..." will be completely revised and published in the form of separate pamphlets treating various problems of the protection of communication lines against electromagnetic influences. The presently published pamphlets on grounding and protection against lightning will be parts of the "Directives ...".

The report on the work performed by the V IK during the past research period will be submitted for approval to the VII Plenary Assembly of the MKKTT.

More than 60 people participated in the meeting of the VI IK engaged in the problems of protection against corrosion: specialists of 20 Communications Administrations, 12 private recognized firms and companies, as well as of the International Union of Railways.

The participants of the m ting examined in detail the results of studies on all 14 problems entrusted to the VI IK, formulated the answers for them, worked out new and refined the existing formulations of a number of recommendations of series "L".

In the course of the meeting, 31 permanent, 22 temporary, and 15 delayed documents published during the period of the meeting were studied. It should be mentioned that the majority of the contributions dealt with the problem 7/VI dealing with the study of methods of connecting conductors of communication cables.

Studies on two problems out of fourteen under study by the VI IK pertaining to the protection of waveguide communication lines against corrosion and cables with a

plastic insulation of the conductors have been completed and appropriate recommendations have been developed.

The meeting of the commission formulated five new problems which, upon approval by the VII Plenary Assembly of the MKKTT, will be turned over to VI IK for study in 1981-1984.

These research topics include the following: peculiarities of laying long cables; permissible bending of cables during laying; joint use of trenches and collectors for laying communication cables and pipelines (this problem was proposed for study by V IK); methods of connecting optical communication cables and their protection against mechanical damages in the process of their storage, transportation, laying, and operation.

The final meeting decided to request the VII Plenary Assembly of the MKKTT to approve and permit publishing of recommendations on connecting conductors of communication cables worked out within the framework of the problems 7/VI in the form of a separate pamphlet. There is no doubt that this document will be a good aid for specialists in selecting the most suitable methods and means for splicing communication cables.

Great interest was expressed by the participants of the meeting and specialists in the area of cable techniques by the exhibit during the meeting of the VI IK showing the method of splicing conductors of communication cables. It was arranged with the participation of communications administrations of Great Britain, France, Denmark, Switzerland, and USSR, as well as the 3M Company, 'Raykem,' ATT and NTT.

The exhibit showed various methods of connecting balanced and coaxial communication cables, instruments and machines for connecting them, devices checking the quality of connections, as well as movies and slides on the subject of the exhibit. Methods of connecting optical communication cables were shown for the first time at an exhibit of this kind.

Great interest was aroused among specialists by module connectors installed at cable manufacturing plants which ensure rapid connection of cables after their laying. When laying cables in telephone ducts, connectors are installed on one end of the cable, which makes it possible to double the speed of connecting cables, and when laying cables in an open trench, connectors can be installed on both ends. A special device for checking the quality and correctness of connections submitted by the ATT Company is very useful.

The great variety of the displayed methods and means of connecting both balanced and coaxial pairs makes it possible to select the most rational methods which are most reliable and require a lower labor and time input.

A number of items displayed at the exhibit will be reflected in the recommendations on the methods of connecting the conductors of communication cables. In the opinion of the participants of the meeting, the exhibit definitely contributed to the broadening of the technical horizons of the specialists who attended it.

The reports on the work of the V and VI IK for the research period were submitted for approval to the VII Plenary Assembly.

10,233
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REGIONAL CONFERENCE ON MEDIUM WAVE BROADCASTING HELD

Moscow ELEKTROSVYAZ' in Russian No 3, Mar 81 pp 51-53

[Article by A. M. Varbanskiy]

[Text] Countries of Region II (territory of North and South America, islands of the basin of the Caribbean Sea and Greenland) use medium waves in the 525-1605 kHz band for radio broadcasting. According to the new international distribution of frequency bands to be introduced in 1982 for radio broadcasting, Region II was assigned the 525-1705 kHz frequency band. Moreover, sections of the 525-535 and 1605-1705 kHz band are assigned for joint use with other services. Long waves are not used for radio broadcasting in the countries of Region II.

There are more than 10,000 medium-wave stations operating in Region II. Their distribution is regulated by regional and bilateral agreements concluded during different years. There was no single frequency plan for radio broadcasting, which complicated further development of radio broadcasting in the countries of Region II.

In this connection, by resolution of the International Telecommunication Union, the first session of the World Administrative Conference on Radio Broadcasting on Medium Waves for the Countries of Region II was held in March 1980. Its purpose was to develop technical criteria on the basis of which a radio broadcasting plan (point, frequency, power, antenna characteristic, etc) was to be developed in 1981 for the countries of Region II in the 535-1605 kHz band. Technical criteria and a plan for the remaining section of the band will be developed in subsequent years. An analogous conference for developing technical criteria of planning for the countries of Regions I and III(Europe, Africa and Asia) was held in 1974 [1]. On the basis of its results, a radio broadcasting plan was developed and adopted.

Delegations of practically all the countries of Region II participated in the conference, including Great Britain, France, Denmark and Holland having their territories in Region II.

The first session of the conference was preceded by extensive preparatory work of specialists of the countries of Region II in the course of the last few years. As a result of this, coordinated technical proposals were developed. However, a sharp discussion developed in the course of the first session, as a result of which many parameters were revised, and final decisions were postponed to the second session of

the conference on a number of fundamental problems (frequency separation between carrier frequencies, permissible power, methods of field intensity calculation, etc).

When discussing the progress and results of the first session, we should keep in mind the special characteristics of the structure and organization of radio broadcasting on medium waves in the countries of Region II. Radio broadcasting stations in the countries of Regions I-III are under the authority of governmental organizations or other official agencies. They are used for nationwide or regional radio broadcasting. In this connection, high-power transmitters (500 kW and over) are used, which makes it possible to serve large areas.

In the countries of Region II, radio broadcasting stations belong, as a rule, to numerous private companies and are used for serving small territories or individual cities. Their programs are local in nature, and not national. In this connection, the power of their transmitters is not great, rarely exceeding 50 kW.

Table 1

Country	Number of Transmitters, items					
	Total	to 1 kW	1 kW	5 kW	10 kW	to 50 kW
Costa Rica	47	1	22	11	11	2
Dominican Republic	96	17	42	31	6	-
Ecuador	228	117	74	14	16	7

Table 1 shows the data on the composition of transmitting stations of some countries of Region II.

In planning, it is proposed to classify radio stations depending on their purpose, and permissible capacities are established for each class (Table 2).

Table 2

Station Class	Purpose, Method of Service	Permissible Power, kW
A	Service to large territories. Ground and space waves.	Day 100; night 50
B	Service to densely populated regions. Ground wave.	50
C	Service to individual cities. Ground wave.	Day 1-10 depending on the level of natural interference; night 1.

The value of the maximum permissible power of Class A stations will be defined more precisely due to the fact that even now stations with capacities of 150-500 kW are operating and are under construction in a number of countries of Region II.

The value of field intensity at the boundary of a service zone which is subject to protection is established depending on the class of the station and the noise level at its location (Table 3). Three noise zones are determined. Zone 3 -- highest level -- territories of Ecuador, Columbia, Venezuela, and Trinidad and Tobago. Zone 2 -- medium level -- territory between latitude 20 degrees South and 20 degrees North,

Table 3

Station Class	Protected Field Intensity, μV/m, for noise zone 1	2	3
A	100/500	250/1250	750/1400
B	500/2500	1250/6500	2800/7000
C	500/4000	1250/10,000	2800/11,000

Note. Numerator -- field intensity value for the day; denominator -- for the night.

with the exception of the eastern part of Brazil (longitude 45 degrees West), as well as the territory of Panama and other countries adjacent to it in the North. Zone 1 -- minimum level of noise -- the entire remaining territory of Region II.

The adopted field intensity values do not have sufficient technical substantiation. For example, the value of 100 μV adopted for stations of Class A is below the noise level of a household receiver, which was mentioned by some participants of the conference.

The problem of the value of frequency separation between carrier frequencies aroused much controversy. At the present time, a frequency separation of 10 kHz is being used in the countries of Region II. It was recommended initially at the preparatory conferences (in the countries of Regions I-III, 9kHz). Just before the conference, it was proposed to switch to a separation of 9 kHz. This was motivated by the desire to separate additional frequency channels (switching to 9 kHz creates 12 additional channels), because the administrations of a number of countries experience much pressure from private companies demanding permits for construction of new stations. The proposal about the switching to a separation of 9 kHz was supported by the majority of the delegations. However, due to strong objections of some delegates who pointed out that this proposal was not sufficiently studied, the final decision was postponed until the second session. A special group of experts from eight countries was created for additional studies and preparation of the proposal.

In this connection, at the first session, the values of protective relations were defined for two possible frequency separations: 9 and 10 kHz. In an adjacent channel, a protection of 5 dB (lowering to 0 dB is considered) is accepted for a separation of 9 kHz, and 0 dB is accepted for a separation of 10 kHz. In a combined channel, the protection does not depend on the frequency separation, and is accepted to be equal to 26 dB.

It is stipulated in the decisions of the first session that the plan for frequency distribution to be compiled during the second session of the conference in 1981 will be intended for a five-year period, 1983-1987. After the expiration of this period, the plan will be subject to revision with consideration for the state of its realization. This decision, which was termed dynamic, was characterized as an achievement, however, it is possible that countries which will be able to realize the plan by 1988 will have advantages in developing the plan for the subsequent period (after 1988) from the frequencies unused by other countries.

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10,233
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